

Claims

1. Structural component (1) made of long-fibre reinforced thermoplastic material (LFT) with integrated continuous fibre (EF) - reinforcements, characterised by
 - at least three individually integrated, shaped continuous fibre (EF) - profiles (10),
 - which run together at an intersection point,
 - and which form a spatial (three-dimensionally developed) intersection point (50),
 - wherein at the intersection point at least one EF - profile (10) respectively lies in an upper and in a lower main plane (H1, H2) of the intersection point and one EF - profile with vertical extension (v) extends continuously between these EF - profiles of the upper and the lower main plane
 - and wherein the EF - profiles (10) are joined together by the LFT - mass (6) at the intersection point (50) in a force-transmitting manner
 - by corresponding shapings (32) of the LFT - mass
 - and wherein several forces (F) or moments (M) are capable of being supported on the EF - profiles (10) at several points for the absorption of external loads (L).
2. Structural component according to claim 1, characterised in that external force introductions (L) are formed by means of LFT - shapings (32) and/or with corresponding EF - profile shapings (22).
3. Structural component according to claim 1, characterised in that the three-dimensional intersection points (50) are developed as "X"-, "T"- or "L"-shaped.

4. Structural component according to claim 1, characterised in that the EF - profiles are arranged in such a manner at the intersection point (50), that the EF - profiles (10) are capable of being inserted into an LFT - shaping tool one after the other or together and subsequently are capable of being pressed together with an introduced, molten LFT - mass (6) in an LFT - press in a single step and into a one-piece component.
5. Structural component according to claim 1, characterised in that the EF - profiles (10) are built up out of layers with differing fibre orientations.
6. Structural component according to claim 1, characterised in that the LFT - mass (6) comprises an average fibre length of at least 3 mm.
7. Structural component according to claim 1, characterised in that the EF - profiles (10) comprise a continuous fibre reinforcement (EF) made out of glass -, carbon - or aramide fibres.
8. Structural component according to claim 1, characterised in that the thermoplastic material of the LFT - mass (6) and of the EF - profiles (10) consists of partially crystalline polymers such as PP, PET, PBT, PA.
9. Structural component according to claim 1, characterised in that the EF - profiles (10) comprise a three-dimensional profile shaping.
10. Structural component according to claim 1, characterised in that the EF - profiles (10.1 – 10.6) comprise a bend, a twist, a fold and/or a surface structuring in longitudinal direction.
11. Structural component according to claim 1, characterised in that the EF - profiles (10) comprise differing cross-sectional shapes.

12. Structural component according to claim 1, characterised in that shapings on the EF - profiles (22) and shapings (32) of the LFT - mass for force introductions and for force transmissions between the EF - profiles (10) and the LFT - mass (6) as well as to inserts (4) are provided.
13. Structural component according to claim 1, characterised in that an EF - profile (10) with a positioning shoulder (55), a thick tensile - and compressive force zone (56) on top and underneath as well as a thinner thrust zone (57) in between is formed, which is positioned in a rib (8) or in a crimp wall (7) of the structural component.
14. Structural component according to claim 1, characterised in that the EF - profiles (10) form a "moment - load lever structure" with a "T"-shaped or "L"-shaped three-dimensional intersection point.
15. Structural component according to claim 1, characterised in that it forms a single seat back (72) with a belt connection (60).
16. Structural component according to claim 1, characterised in that it forms a two-thirds rear seat back (74) with belt connection (60) and lock (58).
17. Structural component according to claim 1, characterised in that it forms a seat shell (76) or a cabin floor.
18. Structural component according to claim 1, characterised in that it forms a supporting structure of a car door (78) with integrated side-crash protection.
19. Structural component according to claim 1, characterised in that is assembled out of several parts (e.g., two-shell 1, 1.2) (82).

20. Method for the manufacturing of a structural component according to claim 1, characterised in that

several shaped EF - profiles (10) are deposited in an LFT - shaping tool one after another or together and for the formation of a three-dimensional intersection point (50) there are positioned in a given position and subsequently an LFT - mass (6) is introduced and together with the EF - profiles (10) is pressed into a one-piece component in a single step.